

# The RATSletter

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## DRI Basic Economics Databases

We have a lot of exciting news regarding DRI databases, including the availability of on-line access and additional databases. Read on for details!

### On-Line Access

We are very pleased to announce the availability of subscriptions for on-line access to DRI's *Basic Economics* database (formerly known as Citibase), which we have been offering in diskette form for many years.

As you may know, the *Basic Economics* database comprises more than 6,000 monthly, quarterly, and annual series providing US macroeconomic data from various Federal Agencies, the Federal Reserve Board, and some private organizations. We continue to offer yearly diskette subscriptions to this database, with updates shipped on a monthly or quarterly basis. However, you now have the option of downloading the data, using either the latest version of DRI's powerful DRIPRO software for Windows-based systems, or a platform-independent Web-based interface (due to be available shortly).

An on-line subscription provides the most immediate access to the data, and allows you to take advantage of powerful search features to locate series of interest. You can also extract data in many different file formats, and select from wide range of frequency-conversion options.

On-line subscriptions are also significantly cheaper than diskette subscriptions. However, some users may still prefer the convenience of automatically receiving the data on diskette every month, particular those who make use of many series. Also, the "Mini" database (a subset of the *Basic Economics* database consisting of about 600 of the most-used series) is currently only available on diskette.

### Daily, Weekly, and Foreign Exchange Data

If you purchase an on-line subscription to *Basic Economics*, you also have the option of subscribing to one or more of these other databases:

*Basic Daily*—hundreds of daily financial series, including commodity prices and interest rates.

*Basic Weekly*—approximately 500 series of weekly financial variables, banking data, commodity prices, and other economic indicators.

*Basic FX (Foreign Exchange)*—daily foreign exchange rate series.

Or, you can purchase a subscription to all four databases at a substantial discount.

See page 3 for pricing details, and please contact Estima if you have any questions.

## OECD MEI Databases

For users in need of international data, we offer the OECD's MEI database. The MEI is supplied on diskette as a set of RATS format data files, with one file per country, making this database very convenient for RATS users. For those of you who don't have RATS, we include a copy of our menu-driven RATSDATA utility, which allows you to view, print, and graph data, and export series to a variety of other file formats, including text files, WKS files, and Excel files.

Recent additions include data for Mexico, Poland, Hungary, and the Czech Republic. The database also now includes aggregate data on the groupings such as the world, the G7 countries, Europe, and others.

Contents vary somewhat from country to country, but most include GDP data, price deflators, interest rates, balance of payments, money supply, consumer and producer price indices, production, sales, and employment data, and more. Most series are quarterly or monthly, and date back to 1960 where available.

You can purchase the G7 version, which includes data for the United States, the United Kingdom, Canada, France, Germany, Italy, and Japan. Or, you can purchase the "Full" version, which includes data on the G7 countries plus Australia, Austria, Belgium, Czech Republic, Denmark, Finland, Greece, Hungary, Iceland, Ireland, Korea, Luxemburg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Spain, Sweden, Switzerland, and Turkey, as well as aggregate data. Please see page 3 for pricing.

## Additional E-mail Addresses for Estima

We have two new addresses available to help expedite handling of your messages: For sales, pricing, and billing inquiries, direct your message to "sales@estima.com". For technical support, use "support@estima.com". Of course, you can always use our general "estima@estima.com" address, and we'll be sure your message gets to the right person.

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## Series Splicing—Let %IF Do the Work

We have had a number of recent technical support e-mails which proposed codings similar to this for dealing with series splicing:

```
if x>3.0
  set y = c0 + c1*(x-3.0)
else if x>2.0
  set y = d0 + d1*(x-2.0)
else
  set y = e0 + e1*x
```

The intention is for Y to follow different formulas depending upon the value of X. However, this is *not* the correct way to do this with RATS. All that the **IF-ELSE**'s will do is pick one of the three **SET** instructions to apply to *all* entries of Y. The code shown above is written as if there is an implied loop over the entries of X which surrounds the whole block of instructions. There isn't! Each **SET** has a loop over entries within itself.

There are several ways to handle this. A reworking which keeps the same basic structure as above is to add an explicit loop:

```
set y entry1 entry2 = 0.0
do t=entry1,entry2
  if x(t)>3.0
    compute y(t) = c0 + c1*(x(t)-3.0)
  else if x(t)>2.0
    compute y(t) = d0 + d1*(x(t)-2.0)
  else
    compute y(t) = e0 + e1*x(t)
end do t
```

Because the conditionals on X and the calculations for Y are done outside of a **SET** instruction, it is necessary to use the (T) subscripts on X and Y. The initial **SET** instruction is added to make sure that the series Y is prepared to take the full range of entries.

While this will work, it doesn't take advantage of the structure that the **SET** instruction provides for creating and transforming data series. Instead of putting a loop outside, the better approach is to pull the logic inside. This can be done using the %IF function. Its syntax is

```
%IF(condition,value if true,value if false)
```

To handle multiple branches, as above, just use another %IF for the "value if false" condition. The following single instruction will take the place of the entire loop above:

```
set y = %if(x>3.0,c0+c1*(x-3.0),$
  %if(x>2.0,d0+d1*(x-2.0),e0+e1*x))
```

This can be a bit hard to follow, particularly if you get more branches than this. However, it's a simple matter to add "white space" to this using line continuations. A prettier

(Continued on Page 4)

## GMM Instrument Selection Procedure

A recent paper by Donald Andrews ("Consistent Moment Selection Procedures for Generalized Method of Moments Estimation." *Econometrica*, Vol. 67, No. 3, pp 543-564) proposed a method for selecting a valid set of instruments for a GMM where some of the moment conditions are suspected of being incorrect.

To do this precisely as described by Andrews requires running GMM with all subsets of a given size out of the instrument set. The following code provides a systematic method for generating such subsets (see our web site for a complete example).

```
declare vect[int] pos
*
* pop is the population size (10 in this
* example). pick is the number of items to
* be picked
*
compute pop = 10, pick = 5
dim pos(pick)
*
* start with 1,2,...,pick. The vector of
* integers "pos" is always filled with an
* increasing sequence of values between 1
* and pop.
*
ewise pos(i) = i
*
compute fixpos = pick
begin {
  loop {
    <<Insert code here to do what you want
    with the indexes in pos--see below>>
    *
    * When we hit the end of the range for a
    * slot, back up to the nearest preceding
    * slot which still can be incremented.
    *
    while (fixpos>=1.and.pos(fixpos)==$
      pop+fixpos-pick)
```

(Continued on Page 4)

## Correction to Last Issue's Markov Story

The story on Markov Switching models in our December, 1998 issue included a typo in the formula for "regime 2" that appeared on page 1 of the newsletter. The last two lines on that page should have read:

In regime 1,  $y(t) = a01 + a11 * x_1(t) + u_1(t)$

In regime 2,  $y(t) = a02 + a12 * x_2(t) + u_2(t)$

In the original version, *a01* and *a11* incorrectly appeared in the second line, rather than *a02* and *a12*. The code examples on page 4 (and in the source file on the web site) were correct. We apologize for any inconvenience.

**DRI and OECD Database Prices**

For all diskette products, “Monthly” and “Quarterly” indicate a one-year subscription to the database, with updates sent each month or quarter, respectively. “Annual” prices are for one copy of the database with no updates.

DRI Diskette subscriptions include only the *Basic Economics* database. On-line subscriptions allow unlimited access (via the included DRIPro software or a Web browser) for one year. With a subscription to *Basic Economics*, you can add *Daily*, *Weekly*, and/or *FX* (foreign exchange) databases for the “each” price shown below, or purchase a complete package including access to all four databases.

**DRI Basic Economics Database on Diskette**

<b>Commercial</b>	<b>Price:</b>
Full, Monthly	\$3,200
Full, Quarterly	\$1,800
Full, Annual	\$1,300
Mini, Monthly	\$1,800
Mini, Quarterly	\$1,300
Mini, Annual	\$1,000
<b>Academic</b>	<b>Price:</b>
Full, Monthly	\$2,500
Full, Quarterly	\$1,300
Full, Annual	\$900
Mini, Monthly	\$1,200
Mini, Quarterly	\$900
Mini, Annual	\$600

**DRI Databases via On-Line Access**

<b>Commercial</b>	<b>Price:</b>
Basic Economics	\$2,000
Add Daily, Weekly, or FX, each at	\$1,700
All four (Basic, Daily, Weekly, and FX):	\$6,700
<b>Academic</b>	<b>Price:</b>
Basic Economics	\$1,800
Add Daily, Weekly, or FX, each	\$1,100
All four (Basic, Daily, Weekly, and FX):	\$3,700

**OECD MEI (Diskettes Only)**

<b>Commercial</b>	<b>Price:</b>
Full, Monthly	\$2,100
Full, Quarterly	\$1,500
Full, Annual	\$1,000
Seven Country, Monthly	\$1,600
Seven Country, Quarterly	\$1,000
Seven Country, Annual	\$600
<b>Academic</b>	<b>Price:</b>
Full, Monthly	\$1,680
Full, Quarterly	\$1,200
Full, Annual	\$800
Seven Country, Monthly	\$1,280
Seven Country, Quarterly	\$800
Seven Country, Annual	\$480

**Macintosh RATS 4.3**

Just a reminder that Version 4.3 of RATS for Macintosh systems is now shipping. If you have Version 4.0 of either MacRATS or MacRATS '020, you are eligible for a free update to Version 4.35 of MacRATS '020.

However, if you have a PowerMac computer, you'll want to upgrade to the very speedy PowerMac version (MacRATS PPC)—the cost for the update is just \$100. Both packages offer a wide array of new features introduced since the release of 4.0, as well as the RATSDATA utility program.

For those of you interested in purchasing a new license, the price for MacRATS PPC is \$500, while MacRATS '020 sells for \$400.

Our popular CATS cointegration analysis package is also available for Mac systems, at just \$100 a copy.

Please contact Estima if you have any questions, or need quotes for multi-user licenses.



**RATS for Educational Situations**

With the 1999-2000 school year fast approaching, we wanted to review the options available for those of you interested in using RATS in classroom/educational environments.

**Classroom RATS**

We offer “classroom” versions of WinRATS and MacRATS for \$50 a copy. These are full-featured versions of RATS that include complete documentation. The only limitation is that they only handle data sets of up to 3000 total data points.

Students who want to upgrade from Classroom RATS to a full version can do so at the discounted student price (see below) and are entitled to a \$50 credit with proof of purchase.

Classroom RATS can be purchased as a group order in quantities of 5 or more, or ordered through a university bookstore.

**Student Discounts**

Full-time students can purchase full versions of RATS at a discount of \$200 off the list price. For example, students can purchase WinRATS-32 for just \$300, instead of the list price of \$500.

Students must provide proof of student status (registration or tuition receipt, or letter from the school or faculty member) in order to receive the discount.

**Network Licenses**

Educational institutions can also purchase multi-user licenses for school network or computer lab installations. Prices start with 4-user licenses, and are available for any size installation. Please contact Estima for details.

## Instrument Selection (Continued from 2)

```

compute fixpos = fixpos-1
*
* If all slots are at their limit,
* we're done.
*
if fixpos==0
  break
*
* Increment the selected slot by one, and
* set all following slots to their
* preceding slot plus one.
*
compute pos(fixpos)= pos(fixpos)+1
do j=1,pick-fixpos
  compute pos(fixpos+j) = pos(fixpos)+j
end do j
compute fixpos=pick
}

```

For the specific application to GMM, the selecting of the instrument set can be done quite easily using the MASK option. Outside the loop, an **INSTRUMENT** instruction lists the complete set of instruments. `pop` is set to the total number of instruments. Also part of the setup is the instruction

```
dec rect mask(pop,1)
```

Where you are instructed to <<insert code...>> above, the following sets up the mask array and estimates the model:

```

compute mask=%const(0.0)
do j=1,pick
  compute mask(pos(j),1) = 1.0
end do j
nlsystem(mask=mask,zudep,inst,noprint) $
/ mygmmfrml

```

We now need to do the “bookkeeping” to keep track of which of these combinations is the best. Before the loop, we add

```
compute bestuzwzu = -1.0
```

and after **NLSYSTEM**

```

if bestuzwzu<0.or.%uzwzu<bestuzwzu
  compute bestuzwzu=%uzwzu,bestset=pos

```

## Series Splicing (Continued from 2)

rewrite of the **SET** above is:

```

set y = %if( x>3.0, $
          c0+c1*(x-3.0), $
          %if(x>2.0, $
            d0+d1*(x-2.0), $
            e0+e1*x) )

```

%IF is extremely useful in **SET** and **EWISE**, both of which have loops built-in, and in **FRML**'s. There are several examples of %IF in **FRML**'s on pages 1-28 and 12-4 of the manual.

## Lookup Table Procedure

In modern time series analysis, it has become increasingly common to have test statistics with non-standard distributions. Unit root, co-integration, and structural break tests all have distributions which cannot be attacked analytically. For simpler distributions like the Normal,  $t$ ,  $\chi^2$  and  $F$ , RATS can compute exact marginal significance levels.

In most procedures that we have seen, these tables have been handled with a fairly clumsy set of **IF**'s and **ELSE**'s. The procedure **TableLookup** (its file name is `tlookup.src` on the Web site) can help with this. It takes as input an  $N \times 2$  array where the first column is a table index and the second the corresponding value. Given a requested index, it returns the value. If the index isn't in the table, **TableLookup** performs a quadratic interpolation.

## Other New Procedures on the Web Site

Listed below are just some of the new or updated procedures that have been posted on our web site in recent months. We generally receive and post a couple of new procedures every few weeks, so check back often to see what's new.

**GARCH.SRC**—a sophisticated procedure for estimating a univariate ARCH/GARCH models. Recent additions include support for MA terms. By Norman Morin.

**VAR.SRC**—a menu-driven procedure for VAR estimation and analysis. Now with faster bootstrapping of standard error bands for IRF's. Blanchard and Quah decomposition for IRFs was added last year. By Norman Morin.

**SARIMA.SRC**—menu-driven proc for selecting and estimating ARIMA models. Many new features, including for non-consecutive lag lists, By Norman Morin.

**ERSTEST.SRC**—performs the DFGLS, PT, DFGLSu, and QT tests for unit roots due to Elliott, Rothenberg, and Stock (1996 *Econometrica*). By Alan Taylor.

**BPFILTER.SRC**—executes a bandpass filter on a series using the Baxter and King (1995) method. By Alan Taylor.

**NORMTEST.SRC**—performs multivariate and/or univariate normality tests on a list of series, by Ulrich Leuchtmann.

**MODES.SRC**—finds the critical windows and the number of modes of a series by **KERNEL** looping. Companion proc **BOOTS.SRC** retrieves critical windows, bootstraps the series for each of them, and performs a hypothesis test on the number of modes. By Guido Travaglini.

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